an amplitude identifying circuit detecting the presence or absence of a burst signal in said input signal based on the output signal from the DC variation removing signal amplifier;

said amplitude identifying circuit including:

an amplitude detection circuit detecting the maximum amplitude of the output signal of said DC variation removing amplifier;

a threshold level control circuit controlling the threshold level; and

a comparator circuit comparing the output level of said amplitude detection circuit with said threshold level and outputting a detection signal indicating the presence or absence of the burst signal.

REMARKS

An Office Action was mailed on October 3, 2002. Claims 1 – 39 are pending in the present application. With this Response, claims 1, 10, 19 and 28 are amended. No new matter is introduced. Support for these amendments may be found, for example, with reference to Applicants' specification at page 13, lines 24 – 33 and page 17, lines 8 - 14

REJECTION UNDER 35 U.S.C. §§ 102, 103

Claims 1, 2, 4, 7 – 11, 13, 16 – 19, 22, 25 – 28, 34 and 37 – 39 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,475,342 to Nakamura et al. in view of U.S. Patent No. 5,319,191 to Crimmins. Claims 3, 5, 6, 12, 14, 15, 23, 24, 35 and 36 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakamura in view of Crimmins and U.S. Patent No. 6,038,049 to Shimuzu et al. Claims 20, 21 and 30 – 33 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakamura in view of Crimmins and U.S. Patent No. 6,115,163 to Nobuhara. Claim 29 is rejected under 35

U.S.C. § 103(a) as being unpatentable over Nakamura in view of Crimmins and U.S. Patent No. 6,018,407 to Hatakeyama et al. Applicants amend claims 1, 10, 19 and 28 to further clarify the nature of their invention, and respectfully traverse these rejections.

In Applicants' independent claims 1, 10, 19 and 28, Applicants claim various embodiments of a burst signal detection circuit. Importantly, each of the embodiments claimed by independent claims 1, 10, 19 and 28 require means for removing the DC level of an input signal to an amplitude identifying circuit of the burst signal detection circuit by differentially amplifying the difference between the input signal level and one of the peak level and bottom level of the input signal. In other words, the DC variation in the input signal is removed by subtracting one of the peak level and bottom level of the input signal from the input signal level.

The selection of one of the peak level and bottom level is based on the polarity of the DC circuit component. In other words, depending on circuit polarity, one of the peak level and bottom level effectively corresponds to the level of the DC variation component (see, e.g., page 17, lines 23 – 28 of Applicants' specification). Removing the DC variation component enables a reduction in the false detection of burst signals (see, e.g., page 4, line 17 through page 5, line 1 of Applicants' specification)

Nakamura discloses an amplifier for stably maintaining a constant output, including a cascade of basic circuits (BCN) each for detecting a top value and bottom value of a waveform and for outputting a middle value between the top and bottom values (see, e.g., FIG. 6 of Nakamura). The Examiner compares a first basic circuit (BC1) to Applicants' DC variation removing circuit, and a second basic circuit (BC2) to Applicants' amplitude identifying circuit. The Examiner acknowledges that Nakamura

fails to teach Applicants' comparator circuit for comparing the levels of the amplitude detection circuit and threshold level control circuit, and cites Crimmins as teaching this missing limitation.

Crimmins discloses an amplitude shift-keyed receiver with signal delay and stretching to produce binary signal pulses. As shown in FIGs. 1 and 2 of Crimmins, a burst signal pulse 106 is produced on an output 108 whenever a stretched signal 68 exceeds a threshold signal Th.

Nakamura's basic circuits BCN each appear to be equivalent to Applicants' signal amplifier 13. The Examiner compares Applicants' threshold level control circuit 17 to ATC 10 of Nakamura's basic circuit BCN. A more apt comparison of ATC 10 would appear to be to Applicants' ATC 14 of signal amplifier 13.

In any case, neither Nakamura or Crimmins, either alone or in combination, teach or otherwise suggest Applicants' DC variation removing circuit 12, 42 for removing the DC component of the input signal by differentially amplifying the difference between the input signal level and one of the peak level and bottom level of the input signal. Nakamura merely discloses an ATC circuit that outputs a value between peak and bottom levels as a reference voltage. Crimmins merely discloses means for producing a pulse when a signal exceeds a threshold set on the basis of a noise level in the system.

Shimizu discloses a level shift circuit to produce a threshold. Nobuhara discloses master and slave peak detection circuits. Neither Shimizu or Nobuhara, alone or in combination with Nakamura or Crimmins, teach or otherwise suggest Applicants' DC variation removing circuit 12, 42

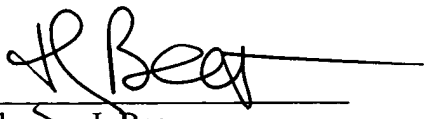
Accordingly, Applicants respectfully submit that independent claims 1, 10, 19 and 28 are not made obvious by any combination of the cited references, and are therefore allowable. As claims 2 – 9, 11 – 18, 20 - 27 and 29 – 39 respectively depend from allowable claims 1, 10, 19 and 28, Applicants further submit that claims 2 – 9, 11 – 18, 20 - 27 and 29 – 39 are allowable for at least this reason.

CONCLUSION

An earnest effort has been made to be fully responsive to the Examiner's objections. In view of the above amendments and remarks, it is believed that claims 1 – 39, which include independent claims 1, 10, 19 and 28, and the claims that depend therefrom, stand in condition for allowance. Passage of this case to allowance is earnestly solicited. However, if for any reason the Examiner should consider this application not to be in condition for allowance, he is respectfully requested to telephone the undersigned attorney at the number listed below prior to issuing a further Action.

Attached is a marked up version of the changes made to the specification and claims by the current amendment. The attached pages are captioned **"Version With Markings To Show Changes Made"**. Any fee due with this paper may be charged on Deposit Account 50-1290.

Respectfully submitted,



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IN THE CLAIMS

Please amend claims 1, 10, 19 and 28 as follows:

1. (Amended) A burst signal detection circuit comprising:

a DC variation removing circuit [for] detecting the bottom level or the peak level of an input signal and removing the DC level variation of the input signal [based on the bottom level or the peak level] by differentially amplifying the difference between the input signal level and the peak level or bottom level of the input signal; and

an amplitude identifying circuit [for] detecting the presence or absence of a burst signal in said input signal based on the output signal from the DC variation removing circuit;

said amplifying identifying circuit including:

an amplitude detection circuit [for] detecting the maximum amplitude of the output signal of said DC variation removing circuit;

a threshold level control circuit [for] controlling a threshold; and

a comparator circuit [for] comparing the output level of said amplitude detection circuit with said threshold level and outputting a detection signal indicating the presence or absence of the burst signal.

10. (Amended) A burst signal detection circuit comprising:

a DC variation removing circuit [for] detecting the bottom level or the peak level of an input signal and removing the DC level variation of the input signal [based on the

bottom level or the peak level] by differentially amplifying the difference between the input signal level and the peak level or bottom level of the input signal;

a signal amplifier [for] amplifying the output signal of said DC variation removing circuit; and

an amplitude identifying circuit [for] detecting the presence or absence of a burst signal in said input signal based on the output signal from said signal amplifier;

said amplitude identifying circuit including:

an amplitude detection circuit [for] detecting the maximum amplitude of the output signal of said signal amplifier;

a threshold level control circuit [for] controlling the threshold level[,]; and a comparator circuit [for] comparing the output level of said amplitude detection circuit with said threshold level and outputting a detection signal indicating the presence or absence of the burst signal.

19. (Amended) A burst signal detection circuit comprising an amplitude identifying circuit including:

an amplitude detection circuit [for] detecting the bottom level or the peak level of an input signal, [for] removing the DC level variation of the input signal [based on said bottom level or said peak level] by differentially amplifying the difference between the input signal level and the peak level or bottom level of the input signal, and [for] detecting the maximum amplitude of said input signal;

a threshold level control circuit [for] controlling a threshold level; and

a comparator circuit [for] comparing the output level of said amplitude detection circuit with said threshold level and outputting a detection signal indicating the presence or absence of the burst signal.

28. (Amended) A burst signal detection circuit comprising:

a DC variation removing circuit [for] detecting the bottom level or the peak level of an input signal, [for] and removing the DC level variation of the input signal [based on the bottom level or the peak level] by differentially amplifying the difference between the input signal level and the peak level or bottom level of the input signal, and for amplifying said input signal; and

an amplitude identifying circuit [for] detecting the presence or absence of a burst signal in said input signal [in said input signal] based on the output signal from the DC variation removing signal amplifier;

said amplitude identifying circuit including:

an amplitude detection circuit [for] detecting the maximum amplitude of the output signal of said DC variation removing amplifier;

a threshold level control circuit [for] controlling the threshold level; and

a comparator circuit [for] comparing the output level of said amplitude detection circuit with said threshold level and outputting a detection signal indicating the presence or absence of the burst signal.